



UK Research  
and Innovation

RT2 03

## UK Research and Innovation – High-level Sector Round Tables

### ROUND TABLE 2

## Valuing and Measuring Natural Assets for Land Management

Wednesday 21 November 2018, 10:30-14:30  
(refreshments available from 10:00)

[Prince Philip House](#), 3 Carlton House Terrace, St. James's, London SW1Y 5DG

## RELEVANT RESEARCH AND KNOWLEDGE EXCHANGE

The aim of this paper is to provide both an overview and specific relevant examples of (predominantly NERC) funded activities that have a focus on natural capital and land management. It is structured in the following sections:

1. Overview of recent and ongoing research activity
2. Relevant research output - terms of tools and methods
3. An example of a research programme
4. NERC Knowledge Exchange contacts
5. Other Knowledge Resources

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## 1. OVERVIEW OF RECENT AND ONGOING RESEARCH ACTIVITY

A recent scour of research databases using such terms as ‘valuing nature’, ‘natural capital’ and ‘ecosystem services’ identified over 650 relevant projects with a combined value of £350M. This is predominantly made up of research grants (75%). It is likely that many of these projects may be producing output with potential utility to the agriculture and land management sectors. Examples of projects likely to deliver outputs of relevance to the agriculture and land management sectors are shown in Annex 1.

The extent to which projects work collaboratively with stakeholders – including business - varies, with some focussing on addressing specific gaps in scientific understanding whilst others take existing research and work with end users to maximise benefit to relevant sectors. In general, knowledge exchange is becoming an increasingly important aspect of successful funding bids and working closely with potential users to deliver beneficial societal impacts is a funding requirement.

## 2. RELEVANT RESEARCH OUTPUT – TOOLS AND METHODS

Many different tools and methods for measuring and valuing natural capital and/or ecosystem services exist. Several pieces of work have reviewed the models available and provided guidance as to which is suitable for a particular setting. The Joint Nature Conservation Council and NERC funded a piece of work to help users to identify the most appropriate assessment tool. The resulting ‘[Tool Assessor](#)’ is hosted by the Ecosystems Knowledge Network (**Table 1**).

**Table 1 Overview of the tools included in the Tool Assessor.**

Tool	Environmental setting			Ecosystem service categories represented			Experience of use			Software				
	Multi scale	No. of models	Terrestrial	Freshwater	Marine	Provisioning	Regulating	Cultural	UK	Outside the UK	Open access	Excel	GIS	Web based
ARIES	✓	11	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		
Benefits of SUDS (BeST)		19	✓	✓		✓	✓	✓	✓		✓	✓		
CoSting Nature	✓	7	✓	✓		✓	✓	✓	?	✓	✓	✓	✓	✓
EcoServ-GIS		10	✓	✓			✓	✓	✓		✓		✓	
GI Valuation Toolkit		14	✓				✓	✓	✓		✓	✓		
i-Tree Eco	✓	7	✓				✓	✓	✓	✓	✓	✓		
InVEST	✓	18	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
LUCI	✓	9	✓	✓			✓		✓	✓			✓	
Natural Cap. Planning Tool		10	✓	✓		✓	✓	✓	✓			✓		
ORVel	✓	1	✓					✓	✓		✓		✓	✓
Participatory GIS tool		5	✓	✓	✓			✓	✓		✓			✓
SENCE	✓	1	✓	✓	✓	✓	✓	✓	✓	✓			✓	
TESSA		10	✓	✓		✓	✓	✓	✓	✓	✓			✓
Viridian		5	✓	✓			✓		✓				✓	

This Tool Assessor looks at 14 of the most commonly used tools and methods and, for each, provides a comprehensive fact sheet detailing the input data required to run the tool, the form of output produced, the geographic scale over which it can be applied, the land uses that it considers, and the cost, software and skill requirements to operate it. This is an extremely useful and highly recommended resource for any person or

organisation wanting to find out more about the tools available for natural capital assessment.

### 3. EXAMPLE OF A RELEVANT RESEARCH PROGRAMME

The NERC ASSIST (Achieving Sustainable Agricultural Systems) programme is a five-year £11 million research programme that, with support from the farming industry, will meet the challenge of feeding growing populations without causing unacceptable environmental damage. The Centre for Ecology & Hydrology in partnership with Rothamsted Research and British Geological Survey will develop innovative farming systems in collaboration with industry and stakeholders to: increase efficiency of food production, improve resilience to extreme events, and reduce the environmental footprint of agriculture. By bringing together this expertise in management of natural resources with crop production the programme will be able to examine fully the impacts of intensification on the wider environment, and develop synergistic farming systems that contribute towards environmental sustainability. The outputs of the ASSIST programme are made available for stakeholders to explore and use (Figure 1) and ongoing feedback on how these can be optimised is welcomed.

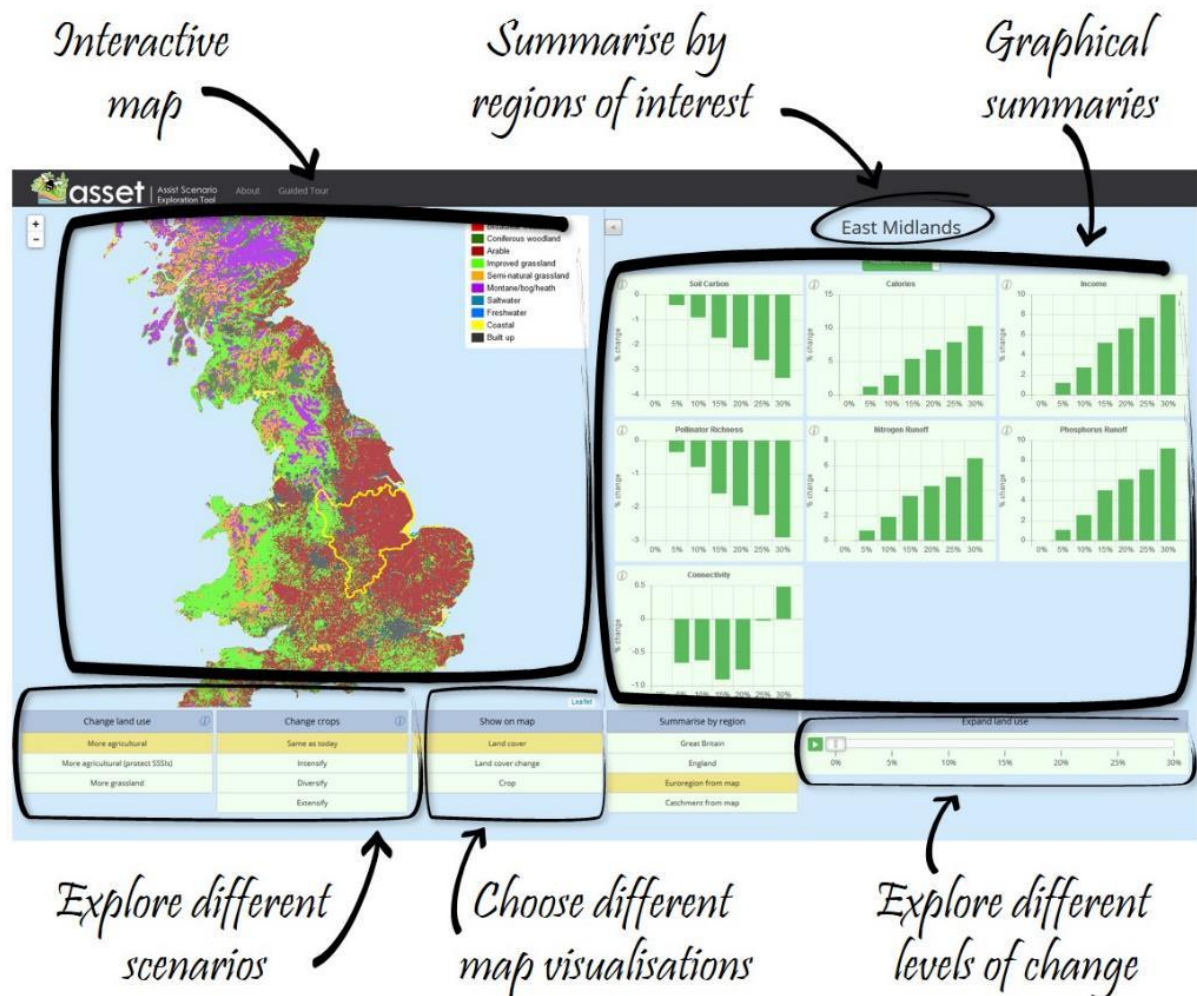


Figure 1 Screenshot from the Assist Scenario Exploration Tool (See <http://assist.ceh.ac.uk/content/asset-assist-scenario-exploration-tool> for more information)

This programme is funded by NERC as part of its national capability (NC), which enables the UK to deliver world-leading environmental science, support national strategic needs, and respond to emergencies. NC funding targets in particular research that integrates over at least national spatial scales and decadal time-scales.

ASSIST will provide the community with validated biophysical models and data at the field and national scale, a UK-wide research infrastructure using commercial farms, and tools to explore and synthesise the data generated. It will provide opportunities for new partnerships between the wider academic community and industry to address critical knowledge gaps, including the socio-economic barriers to uptake and implementation of these new farming systems, and the integration of advances in crop breeding. Together these activities will support the agricultural industry in assessing the potential to meet ambitious goals for environmental sustainability whilst remaining competitive in the global market.

#### 4. NERC KNOWLEDGE EXCHANGE CONTACTS

NERC currently funds several knowledge exchange activities focussing on natural capital and ecosystem services and with relevance to the infrastructure sector. These activities are targeted towards better collaboration between the academic and practitioner communities and are looking for opportunities to work closely with industry in order to understand how best use can be made of relevant science. Primary contacts for this are the NERC funded Knowledge Exchange Fellows.

- **Charlie Stratford**, Natural Capital and Healthy Local Economies: [cstr@ceh.ac.uk](mailto:cstr@ceh.ac.uk)
- **Alister Scott**, Mainstreaming green infrastructure: [Alister.scott@northumbria.ac.uk](mailto:Alister.scott@northumbria.ac.uk)

#### 5. OTHER KNOWLEDGE RESOURCES

A number of platforms bring together relevant knowledge on measuring and valuing natural assets for business. These include:

- [Ecosystems Knowledge Network](#) – UK Network sharing knowledge on practice of putting environment at heart of decision making
- [Valuing Nature Programme](#) – UK interdisciplinary research programme with business engagement focus
- [Natural Capital Hub](#) – Managed by the Natural Capital Coalition, a global multi-stakeholder collaboration aiming to harmonize business approaches
- [Cambridge Institute for Sustainability Leadership – Natural Capital Impact Group](#) – Aims to empower leaders from the worlds of business, government and finance in environmental sustainability
- [EU Business @ Biodiversity Platform](#) – Includes work streams on natural capital accounting, innovation and finance

## Annex 1 – Projects of potential relevance to the agriculture and land management sectors

This list shows some of the over 650 research projects with potential relevance to the agriculture and land management sectors.

Funder	Reference	Title
AHRC	AH/N006232/1	Valuing nature
BBSRC	BB/I000577/1	Linking agriculture and land use change to pollinator populations
BBSRC	BB/P022987/1	Restoring soil function and resilience to degraded grasslands
BBSRC	BB/P023274/1	VOICES: Valuing Orchard and Integrated Crop Ecosystem Services
BBSRC	BB/R00580X/1	Modelling Landscapes for Resilient Pollination Services in the UK
BBSRC	BBS/E/C/00005745	Quantifying ecosystem function and production in grassland landscapes
BBSRC	BBS/E/C/00005746	Enhancing biodiversity in productive agricultural landscapes
BBSRC	BBS/E/C/00005747	Characterising sustainable, adaptive land management systems
EPSRC	1928035	Data analytic technique for land parcel management
ESRC	1944085	Global telecoupling: Linking UK consumption to international natural capital dependencies
Innovate UK	700466	High speed transport tractor suitable for conservation agriculture
NERC	1806209	Investigating the impact of the electrification of transport to reduce carbon emissions on Natural Capital
NERC	1806247	Assessing the economic and conservation impacts of the pine marten, a recovering predator, non-native grey squirrels, and forest land management
NERC	1942319	Developing industry-led tools to improve water and flood defence infrastructure through natural capital
NERC	ceh020005	Natural Capital
NERC	NE/H012435/1	Restoration genetics of degraded forest landscapes: Land management and evolution of reproductive strategies in keystone tree species
NERC	NE/I00307X/1	Integrated Carbon, Water and Land Management for Poverty Alleviation
NERC	NE/I529390/1	Workshop/Seminar: Natural Capital Initiative Biodiversity Offsetting Workshops 2010: Workshop 2 (Scientific and environmental data needs) Workshop
NERC	NE/J014680/1	Biodiversity and the provision of multiple ecosystem services in current and future lowland multifunctional landscapes
NERC	NE/J015210/1	A hierarchical approach to the examination of the relationship between biodiversity and ecosystem service

		flows across coastal margins.
NERC	NE/K015419/1	Supporting ecosystem services on commercial farms: using evidence to inform land management decisions
NERC	NE/K501396/1	South West Water/ University of East Anglia collaboration: Reducing River Pollution by Payments for Ecosystem Services
NERC	NE/N017587/1	Injecting a Natural Capital Planning Tool into Green-Blue Infrastructure Management
NERC	NE/N018125/1	Achieving Sustainable Agricultural Systems (ASSIST)
NERC	NE/N019504/1	Forecasting land management and extreme weather effects on earthworm populations, soil function and ecosystem services
NERC	NE/P006647/1	NEC05943 Natural Capital Knowledge Exchange to Support Healthy Local Economies (Open Call)
NERC	NE/P007716/1	Mechanisms and consequences of tipping points in lowland agricultural landscapes
NERC	NE/P011160/1	Yorkshire iCASP - Yorkshire Integrated Catchment Solutions Programme
NERC	NE/P01254X/1	EKN Tool Assessor: Facilitating the application of innovative tools in the assessment of ecosystem services, green infrastructure and natural capital
NERC	NE/P016944/1	Natural Environment Valuation Online (NEVO): Web-based tools for natural capital management and investment
NERC	NE/R002622/1	Natural capital assessments in the UK: facilitating Defra Pioneer Projects with NERC-funded research
NERC	NE/R004668/1	LANDWISE: LAND management in loWland catchments for Integrated flood riSk rEducation
NERC	NE/S009450/1	Exploring Local Implementation of DEFRA's 25 Year Plan: Learning lessons from embedding the Natural Capital Approach in a Northern Coastal City Region